REMARKS

Claims 1-32 are pending in the present application. Claims 8-11 are allowed. Claims 1-7, 12-32 have been rejected. No claims have been amended in the present amendment. No new matter has been added.

35 U.S.C. §103(A) REJECTIONS

Claims 1-7, 12- 16 are being rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhong et al. (U.S. Patent No. 6,298,264) in view of Vaezy et al. (U.S. Patent Pub. 2005/0038340 A1) and further view of Dev et al. (U. S. 6,654,636 B1).

The Examiner stated:

Zhong et al. teaches a method for leading macromolecule substances into living target cells (title), comprising: injecting tiny bubbles (shock wave, fig. 2) into tissue. Zhong et al. does not teach 3-D imaging not does it teach wherein the shock wave produces holes on the living tissue. Vaezy teaches ultrasound therapy comprising the steps of picking up 3D structural (CT) and photographic (MRI) images of a tissue or organ (par. [0016], [0069]) and teaches merging or superimposing structural and photographic images (par. [0012]), and choosing or selecting a blood vessel passage fully covering target cells (claim 3) that can be utilized to inject macromolecules. Dev et al. teaches injecting tiny bubbles or electric fields to create pores in cells that are temporary and do not cause permanent damage to cells (col. 2 lines 20-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the method and apparatus as taught by Zhong et al. to further include the CT and MRI superimposed imaging of structures and blood vessels as taught by Vaezy et al. in order to provide for accurate imaging of the vasculature structure and to improved agent efficacy through ultrasound therapy (Vaezy et aL., title). It would have also been obvious to have further modified the system and method as taught by Zhong et al. in view of Vaezy et al. to further include the use of tiny bubbles as taught by Dev et al. to create non-permanent pores before injecting macromolecules within target tissue so that the tissue can better absorb large molecules without significant damage (col. 2 lines 20-33). Zhong et al. further

teaches the microbubbles produced acoustically with initial nuclei being less than 10 microns in diameter (col. 15 lines 47-57) and exerting energy of at least 1 Mpa than can be used to form non-permanent holes (claim 11).

Regarding claims 10 & 13, Zhong et al. does not teach using a pipe to inject substance into target cells. Dev et al. teaches wherein macromolecule substance is injected using a pipe (injection needle 120). It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Zhong et al. in view of Vaezy et al. to further include the pipe as taught by Dev et al. to inject macromolecule substance into target tissue in order to provide for better absorption by the tissue by providing in vivo contact (Dev et al., fig. 1).

Claim 17-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaezy et al. (US 20051003834O AI) in view of Donovan (US 6654636 B1).

Regarding claims 17-25,27, Vaezy et al. teaches a system for leading macromolecule substances into living target cells (see title), comprising: an image pickup unit used for 3D structure images (MRI) and 3D blood vessel (CT) images (par. [0069]). Vaezy further teaches choosing a blood vessel passage fully covering target cells for transmitting macromolecule substances (claim 3). Vaezy et al. also teaches an injection unit for transmitting macromolecule substances (par. [0016]) and an energy conversion module (excitation frequency generator 56) used to perform biological effects. Vaezy et al. does not teach a merging unit. Donovan teaches a merging unit for merging CT and MRI images (col. 18 lines 60-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Vaezy et al. to further include a merging unit as taught by Donovan in order provide for clear target confirmation (Donovan, col. 19 lines 1-3).

Regarding claims 26 & 28, Vaezy et al. further teaches the use of a data processing Electronic device (element 210) to lead macromolecules to the target site.

Regarding claims 29-32, Vaezy et al. further teaches a display unit for showing merging data and images and the injection process using a computer-aided apparatus (fig. 22, par. [0067]).

ARGUMENTS

Applicant respectfully disagrees with the rejection.

The Examiner has stated that all of the technical features of claims 1 and 17 have been disclosed in citations.

Applicant respectfully submits that Vaezy et al. does not cure the deficiencies of Zhong. teach interleaving or superimposing B-mode images either different degrees of illumination, of a target tissue (paragraph [0012]). However, the present invention is directed to "merging" 3D structural images of target tissue or organ into 3D blood vessel photographic images. Furthermore, Vaezy et al. teach selecting at least one major blood vessel in the target area as the treatment site, while the present invention definitely chooses a blood vessel passage **fully covering the target cells** for transmitting the macromolecule substance as recited in claims 1 and 17.

Not only is the principle for processing the 3D structure image and the 3D blood vessel photographic image in the recited invention is different from that disclosed by Vaezy et al., but also the vessel to be chosen in the present invention is different from that disclosed by Vaezy et al. Accordingly, it is obvious that Vaezy et al. combined with other cited references failed to teach or suggest at least the above technical features of the present invention. In addition, in light of the above technical features of the present invention, the merged images are use for precisely locating the tumor cells and for choosing the most efficient blood vessel passage (referring to Page 8, Lines 13-23 of the specification).

Accordingly, Applicants respectfully submit that claim 1 is non-obvious over the above cited references.

It is believed that, when claim 1 is non-obvious over the citations, its dependent claims 2-16 are also patentable.

The examiner further points out that Donovan teaches a merging unit for merging CT and MRI images and thus considers that claim 17 is obvious over the disclosure of Donovan in view of Vaezy. However, the image merging unit of the recited invention is used for **merging the 3D structural images into the 3D blood vessel photographic images** of the tissue or organ where the target cells locate. Moreover, it is to be emphasized that CT and MRI images are both 3D structural images. Accordingly, the citations fail to teach the image merging unit for **merging the 3D structural images into the 3D blood vessel photographic images.** Consequently, claim 17 is non-obvious over the citations, and its dependent claims 18-32 are also patentable.

Accordingly, Applicant respectfully requests reconsideration and allowance of claims 1-7 and 18-32 as now presented.

ALLOWABLE SUBJECT MATTER

Claims 8-11 are allowed in the present application. Applicant appreciates and acknowledges Examiners allowance of claims 8-11.

CONCLUSION

Should any unresolved issues remain, Examiner is invited to call the undersigned at the telephone number indicated below.

Respectfully submitted,

July 12, 2007
Date

/Joseph A. Sawyer, Jr./
Joseph A. Sawyer, Jr.
Attorney for Applicant(s)
Reg. No. 30,801
(650) 475-1435